



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/32

Paper 3 Theory (Core)

October/November 2016

MARK SCHEME

Maximum Mark: 80

Published

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This document consists of **15** printed pages.

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Abbreviations used in the Mark Scheme:

- ; separates marking points
- / alternatives
- I ignore
- R reject
- A accept (for answers correctly cued by the question, or guidance for examiners)
- AW alternative wording
- AVP any valid point
- ecf credit a correct statement / calculation that follows a previous wrong response
- ora or reverse argument
- () the word / phrase in brackets is not required, but sets the context
- underline actual words given must be used by the candidate (or grammatical variants of them)

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Question	Answer	Mark	Guidance
1(a)(i)	arachnida / arachnids;	1	
1(a)(ii)	8 legs / 4 pairs of legs; 2 part body / cephalothorax and abdomen; no antennae; simple / multiple, eyes;	2	
1(b)	crustaceans; myriapods; insects;	2	
		Total: 5	

Page 4	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark	Guidance
2(a)	<p>air / droplet; (pathogens) inhaled/breathed in (to lungs);</p> <p>indirect contact / food / liquids / contaminated surfaces or object or water;</p> <p>eat / ingest or drinking / touch surfaces / touch objects / via clothing / linen;</p> <p>broken skin; bites / cuts / grazes / needle stick;</p> <p>blood / (named) body fluids; blood transfusions / sexual contacts / sharing needles;</p> <p>direct / physical, contact; skin to skin / touching someone;</p> <p>AVP with explanation;</p>	4	

Page 5	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark	Guidance
2(b)(i)	<p>skin;</p> <p><i>idea of</i> beneficial bacteria (on skin/in gut/in vagina);</p> <p>nose hair;</p> <p>mucus;</p> <p>stomach acid/HCl/gastric juices;</p> <p>ear wax;</p> <p>tears/saliva;</p> <p>vaginal secretions / AW;</p> <p>scabs seal wounds / blood clots;</p> <p>AVP;</p>	2	

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark	Guidance
2(b)(ii)	<p>keep food covered; kitchen free from animals (pets/rodents/insects etc)/equipment for killing pests/empty waste bins frequently;</p> <p>keep cooked and uncooked food separate; <i>idea of</i> correct storage temperature for food; thawed food not re-frozen; cook food, thoroughly/at correct temperature;</p> <p>wash/clean, food; wash/clean/sterilise, hands; wash/clean/sterilise, equipment; wash/clean/sterilise/use anti-bacterial sprays, on preparation surface; no smoking in the kitchen;</p> <p>different, preparation surfaces/chopping boards, for different food groups; dry surfaces;</p> <p>use within (use by) dates; keep wounds under waterproof dressings; use gloves/hair nets; AVP;</p>	2	

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Question	Answer	Mark	Guidance
2(b)(iii)	vaccination / immunisation / inoculation / antiseptics / disinfectants / sterilising / boiling water; water treatment / sewage treatment / chlorination of drinking water managed land-fill sites; insecticide sprays / mosquito nets / rat poison; condoms; AVP;	1	
		Total: 9	

Question	Answer	Mark	Guidance
3	<u>B</u> ; <u>H</u> ; <u>C</u> ; <u>G</u> ; B/D; <u>E</u> ; <u>H</u> ;	7	
		Total: 7	

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Question	Answer	Mark	Guidance
4(a)(i)	produced/replaced, as rapidly as it is removed; from the environment; so it does not run out;	2	
4(a)(ii)	<i>sustainable resource</i> : forests / wood / timber / fish stocks / biofuels; <i>non-sustainable resource</i> : fossil fuels / e.g. of fossil fuel / mineral reserves / ores AVP;	2	
4(b)	<ol style="list-style-type: none"> 1 screening / filtering or removal of, solids / large objects; 2 settling or heavy objects / grit, sink to bottom; 3 microbes / bacteria, decompose organic matter in aerobic conditions; 4 aeration; 5 organic material removed by anaerobic micro-organisms; 6 chlorine added / UV light / ozone / sterilisation / use of disinfectants / bactericides; 7 distillation; 	3	
		Total: 7	

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Question	Answer	Mark	Guidance
5(a)	<p><i>J</i> – larynx;</p> <p><i>K</i> – trachea;</p> <p><i>L</i> – bronchus;</p> <p><i>M</i> – lung;</p>	4	
5(b)	<p>P;</p> <p><i>idea of:</i> large(r) surface area (than N) / alveolar wall is thin(ner) / small diffusion distance / blood vessel closer to alveolar wall (than R or N) / more rapid diffusion of gases / thin(ner) or smaller cells than Q;</p>	<p>1</p> <p>1</p>	
5(c)(i)	<p>oxygen and glucose (on LHS);</p> <p>water and carbon dioxide (on RHS);</p>	2	

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Question	Answer	Mark	Guidance
5(c)(ii)	<p><i>energy needed for:</i></p> <ul style="list-style-type: none"> 1 contraction of muscle fibres/body movement; 2 (examples of) chemicals reactions; 3 cell division/growth/repair; 4 passage of nerve impulses; 5 brain activity; 6 maintenance of constant body temperature; 7 reproduction/embryo development; 8 digestion; 9 excretion; 10 AVP; 	3	
		Total: 11	

Question	Answer	Mark	Guidance
6(a)	<p>movement of water;</p> <p>by diffusion/down a concentration gradient;</p> <p>through a partially permeable membrane;</p>	3	
6(b)(i)	<p>A: cell wall;</p> <p>B: cytoplasm;</p> <p>C: nucleus;</p>	3	
6(b)(ii)	label line to end, on/in, central vacuole;	1	

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Question	Answer	Mark	Guidance
6(c)	absorbs water / water moves or diffuses into cell / enters the cell; (cell) gets bigger; vacuole gets bigger; cell wall pushed out / AW; (cell) becomes turgid / turgor pressure increases; AVP;	3	
		Total: 10	

Question	Answer	Mark	Guidance
7		5	
		Total: 5	

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Question	Answer	Mark	Guidance
8(a)	urine / excretion; breathing / exhaling; faeces / egestion;	2	
8(b)	sweat comes from sweat glands; (sweat / water) on skin surface; water evaporates; using heat energy from the body; ref. to blood carries heat; loss of heat energy lowers body temperature; AVP; e.g. ref. to latent heat e.g. ref. to energy levels in water molecules	4	
8(c)(i)	<u>9</u> (arbitrary units per hour);	1	

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Question	Answer	Mark	Guidance
8(c)(ii)	(more) weight carried, the more sweat produced / ora; when there is no load, sweat is still produced OR little difference in sweating between no load and 3 kg load; the relationship is not linear / a greater volume of sweat is produced when the increase is from 6 to 9 kg than when the increase is from 3 to 6 kg / AW; data quote comparison of figures;	2	
8(d)(i)	92(%);;	2	$\frac{24.0 - 12.5}{12.5} \times 100$ or $\frac{11.5}{12.5} \times 100$
8(d)(ii)	the track suit adds mass; track suit material, is an insulator / traps heat; more heat retained in body / temperature raised / body is hotter / AW;	2	
		Total: 13	

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Question	Answer	Mark	Guidance
9	chlorophyll; glucose / starch; palisade; stomata; epidermis; chlorophyll;	6	
		Total: 6	

Question	Answer	Mark	Guidance
10(a)	root hair (cell);	1	R root
10(b)	line ending on xylem tissue in root; line ending on xylem tissue in stem;	2	
10(c)(i)	stomata in / transpiration from, lower surface of leaf; jelly blocks the stomata in M / no stomata blocked in L ; stomata are needed for, transpiration / water loss;	2	
10(c)(ii)	little transpiration from / few stomata on, the upper surface; more, transpiration / water loss, from the lower surface of leaf; (so) jelly has little effect / AW;	2	
		Total: 7	